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| 10/728,035 | 12/03/2003 | Rashid A. Attar | 020524 | 9426 |

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QUALCOMM INCORPORATED
5775 MOREHOUSE DR.
SAN DIEGO, CA 92121

| EXAMINER | |
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| FIGUEROA, MARISOL | |
| ART UNIT | PAPER NUMBER |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

us-docketing@qualcomm.com
kascanla@qualcomm.com
nanm@qualcomm.com

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/728,035 | ATTAR ET AL. | |
| | Examiner | Art Unit | |
| | Marisol Figueroa | 2617 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *14 May 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-16 and 18-39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16, and 18-39* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5/14/2007 has been entered.

### *Response to Arguments*

2. Applicant's arguments with respect to claims 1-39 have been considered but are moot in view of the new ground(s) of rejection.

### *Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. **Claims 1, 2, 3, 14, 21, 22, 33, and 39** are rejected under 35 U.S.C. 103(a) as being unpatentable over GANDHI et al. (US 6,944,449 B1) in views of LEE (US 2004/0165529 A1), JANG et al. (US 2002/0173316 A1), CHENG et al. (US 6,240,287 B1), and NAGARAJAN et al. (US 5,884,174).

**Regarding claim 1**, Gandhi discloses an apparatus for communications, comprising:

means for communicating, from a base station, with a plurality of communication devices, the communications placing a load on the base station (Figure 1 shows a base station 10 that communicates with a subscriber station 24 though its receiver, although only one subscriber station is shown it is known that a base station can communicate with a plurality of subscriber stations and each place a load in the system);

means for monitoring a plurality of parameters each relating to the load on the base station (col.2, lines 26-32; the base station includes a pair of measurers for measuring, i.e. monitoring, system performance indicators); and

means for detecting an overload as a result of one of the parameters crossing a threshold (col.2, lines 54 – col.3, lines 1-5; col.4, lines 47 – col.5, lines 1-10; col.9, lines 30-33; the base station establishes a blocking threshold upon the measured second performance indicator that represent an overload control threshold for preventing overloading of the wireless communication systems with active subscribers stations, therefore, when the first performance indicator exceeds the blocking threshold the wireless communication system block or reject calls because the system is overloaded).

But, Gandhi does not particularly disclose wherein the first performance indicator (i.e., one of the parameters) crosses the threshold for an entire period of time for detecting overload condition; and means for implementing a plurality of control mechanisms to reduce the load on the base station, wherein the control mechanism used to reduce the load on the base station is selected based on the type and degree of the overload on the base station.

However, these features are well known in the art and Lee is evidence of the fact. Lee teaches an overload control method that includes judging whether an access network (i.e., base station) is overloaded and restricting an originating call and a termination call (i.e., control mechanisms) according to the determined class (i.e., type) during overload, in addition the overload

control can be discriminately performed according to a degree of the overload so that the overload control method can effectively cope with the overload situation (see abstract; p.0033-0036). The overload control processes periodically checks whether the access network is overloaded, and when is indeed overloaded, a call (i.e., terminating call or originating call) is discriminately restricted according to a degree of overload, furthermore, the overload control process can classify, for example, 24 classes (i.e., types) of overload according to a overload degree and restrict at least one of an originating call and a termination call processed on the basis of each class (p.0051-0052; Fig. 6). The control process determines an overload condition by for example measuring a processor occupancy rate (i.e., parameter) and if the measured processor occupancy rate is maintained for a prescribed time above a reference value (i.e., crossing the threshold for an entire period of time), the control process judges that an access network is in an overload state (p.0054; p.0056).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to modify Gandhi to include the feature of detecting overload as a result of one of the parameters crossing the threshold for an entire period of time, as suggested by Lee, in order to assure that the system is in fact overloaded to avoid premature actions for relieving the overload condition when the system is not really overloaded.

Furthermore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to modify Gandhi to include means for implementing a plurality of control mechanisms (i.e., reject terminating calls or originating calls) to reduce the load on the base station, wherein the control mechanism used to reduce the load on the base station is selected based on the type and degree of the overload on the base station, as suggested by Lee, in order to discriminately perform an overload control according to a degree and class of the overload so that the overload

control method can effectively cope with the overload situation, and in addition to effectively manage the resources at the base station (abstract; p.0033-0034 and p.0083).

Yet, the combination of Gandhi and Lee does not expressly disclose wherein the control mechanism used to control the load is also selected based on the type of application running in the base station, the persistence of the load on the base station and one or more quality of service (QoS) rules.

However, these parameters are well known in the art to influence the decision of controlling the load in a communication system as taught by Jang, Cheng, and Nagarajan.

Jang teaches a method and system for limiting or controlling access in communication networks during overload conditions. Once the network (i.e., BSC or BS) is aware of the overload condition, it begins to analyze the condition to determine the proper course of action, and when it determines that access control should implemented, it then decides which type of application/call (i.e., voice, data, facsimile, etc.) to control. For example, if the overload condition is light to moderate, a decision might be to control or limit access to all data services, but allow voice services to continue, in another situation, the network may limit access to all digital facsimiles services (p.0024-0026, and 0029-0030).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention, to modify the combination to include the features of selecting a load control mechanism based on the type of application, as suggested by Jang, since such a modification would provide the wireless communication network to limit or control different types of application in order to reduce the overload conditions.

Cheng teaches a method for controlling call processing overload at a base station by a "Two-Phase" overload control scheme that first reduces unnecessary user handoff activities in the base

station, and then further reducing busy-hour call attempts (BHCA) traffic if processing overload conditions persist (i.e., overload persistence) and also using a known persistence test (col. 3, line 52 – col. 4, lines 1-20).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention, to modify the combination to include the features of selecting a load control mechanism based on persistence of the load in the base station, as suggested by Cheng, since such a modification would provide the wireless communication network to control the load by different methods when considered necessary according to the load persistence in the base station (col. 3, lines 56-62).

And, Nagarajan teaches that it is well known in the art that quality-of-service criteria is used to measure the effectiveness of call admission control policies to for example minimize the new call blocking and handoff call blocking probabilities in a wireless communication network, therefore, providing a better quality of service to the wireless users. In an operational wireless network needs to ensure that the QOS requirements are being met on an ongoing basis and to do this it might be necessary to vary the parameters of an admission control policy, as for example, the traffic load varies (col. 1, lines 26-60; col. 4, lines 46-60).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention, to modify the combination to include the features of selecting a load control mechanism based on quality of service QoS rules, as suggested by Nagarajan, because it is well known in the art that wireless networks must meet quality of service requirements on an ongoing basis and deal with load variations while satisfying QoS requirements in order to provide a good quality of service to wireless users.

**Regarding claim 2**, the combination of Gandhi, Lee, Jang, Cheng, and Nagarajan disclose the apparatus of claim 1, in addition Gandhi discloses wherein one of the parameters comprises receiver stability at the base station, and the overload is detected as a result of a receiver stability estimate exceeding the threshold (col.2, line 54 – col.3, lines 1-5; col.4, lines 58-62; col.3, lines 23-29, 36-42; col.4, lines 4-7; the base station measures a first performance indicator, i.e. parameter, which is the interference rise over the background noise that is a measure of signal quality or reliability over a defined coverage area for the reverse link and is compared with a blocking threshold that represents a control overload benchmark, therefore if the interference rise over the background noise exceeds the blocking threshold the system is judged be overloaded).

But, Gandhi does not particularly disclose wherein an overload condition is detected as a result of the first performance indicator (i.e., one of the parameters) crossing the threshold for a period of time.

However, this feature is well known in the art and Lee is evidence of the fact. Lee teaches a overload control method in where the control process determines an overload condition by for example measuring a processor occupancy rate (i.e., parameter) and if the measured processor occupancy rate is maintained for a prescribed time above a reference value (i.e., exceeding the threshold for a period of time), the control process judges that an access network is in an overload state (p.0054; p.0056).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention, to modify Gandhi to include the feature of detecting an overload condition when a parameter crosses a threshold for a period of time, as suggested by Lee, because this assures that the system is in fact overloaded to avoid premature actions for relieving the overload condition when the system is not really overloaded.

**Regarding claim 3**, the combination of Gandhi, Lee, Jang, Cheng, and Nagarajan disclose the apparatus of claim 2, in addition Gandhi discloses wherein the receiver stability estimate comprises a rise-over-thermal (col.3, lines 57-60).

**Regarding claim 14**, the combination of Gandhi, Lee, Jang, Cheng, and Nagarajan disclose the apparatus of claim 1, in addition Gandhi discloses wherein one of the parameters comprises receiver stability at the base station (col.2, line 54 – col.3, lines 1-5; col.4, lines 58-62; col.3, lines 23-29, 36-42; col.4, lines 4-7; the base station measures a first performance indicator, i.e. parameter, which is the interference rise over the background noise that is a measure of signal quality or reliability over a defined coverage area for the reverse link and is compared with a blocking threshold that represents a control overload benchmark, therefore if the interference rise over the background noise exceeds the blocking threshold the system is judged to be overloaded).

**Regarding claim 21**, Gandhi discloses a base station configured to support communications with a plurality of communication devices, the communications placing a load on the base station, the base station comprising: a processor configured to monitor a plurality of parameters each relating to the load on the base station (col.2, lines 26-32; the base station includes a pair of measurers for measuring, i.e. monitoring, system performance indicators), and to detect an overload as a result of one of the parameters crossing a threshold (col.2, lines 54 – col.3, lines 1-5; col.4, lines 47 – col.5, lines 1-10; col.9, lines 30-33; the base station establishes a blocking threshold upon the measured second performance indicator that represent an overload control threshold for preventing overloading of the wireless communication systems with active subscribers stations, therefore, when the first performance indicator exceeds the blocking threshold the wireless communication system rejects calls because the system is overloaded).

But, Gandhi does not particularly disclose wherein the first performance indicator (i.e., one of the parameters) crosses the threshold for an entire period of time for detecting an overload condition, and to reduce the load on the base station using a plurality of control mechanisms based on the type and degree of the load on the base station.

However, these features are well known in the art and Lee is evidence of the fact. Lee teaches an overload control method that includes judging whether an access network (i.e., base station) is overloaded and restricting an originating call and a termination call (i.e., control mechanisms) according to the determined class (i.e., type) during overload, in addition the overload control can be discriminately performed according to a degree of the overload so that the overload control method can effectively cope with the overload situation (see abstract; p.0033-0036). The overload control processes periodically checks whether the access network is overloaded, and when is indeed overloaded, a call (i.e., terminating call or originating call) is discriminately restricted according to a degree of overload, furthermore, the overload control process can classify, for example, 24 classes (i.e., types) of overload according to a overload degree and restrict at least one of an originating call and a termination call processed on the basis of each class (p.0051-0052; Fig. 6). The control process determines an overload condition by for example measuring a processor occupancy rate (i.e., parameter) and if the measured processor occupancy rate is maintained for a prescribed time above a reference value (i.e., crossing the threshold for an entire period of time), the control process judges that an access network is in an overload state (p.0054; p.0056).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to modify Gandhi to include the feature of detecting overload as a result of one of the parameters crossing the threshold for an entire period of time, as suggested by Lee, in order to

assure that the system is in fact overloaded to avoid premature actions for relieving the overload condition when the system is not really overloaded.

Furthermore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to modify Gandhi to include the feature of reducing the load on the base station using a plurality of control mechanism based on the type and degree of the load on the base station, as suggested by Lee, in order to discriminately perform an overload control according to a degree and class of the overload so that the overload control method can effectively cope with the overload situation, and in addition to effectively manage the resources at the base station (abstract; p.0033-0034; p.0083).

Yet, the combination of Gandhi and Lee does not expressly disclose wherein the control mechanism used to control the load is also selected based on the type of application running in the base station, the persistence of the load on the base station and one or more quality of service (QoS) rules.

However, these parameters are well known in the art to influence the decision of controlling the load in a communication system as taught by Jang, Cheng, and Nagarajan.

Jang teaches a method and system for limiting or controlling access in communication networks during overload conditions. Once the network (i.e., BSC or BS) is aware of the overload condition, it begins to analyze the condition to determine the proper course of action, and when it determines that access control should implemented, it then decides which type of application/call (i.e., voice, data, facsimile, etc.) to control. For example, if the overload condition is light to moderate, a decision might be to control or limit access to all data services, but allow voice services to continue, in another situation, the network may limit access to all digital facsimiles services (p.0024-0026, and 0029-0030).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention, to modify the combination to include the features of selecting a load control mechanism based on the type of application, as suggested by Jang, since such a modification would provide the wireless communication network to limit or control different types of application in order to reduce the overload conditions.

Cheng teaches a method for controlling call processing overload at a base station by a "Two-Phase" overload control scheme that first reduces unnecessary user handoff activities in the base station, and then further reducing busy-hour call attempts (BHCA) traffic if processing overload conditions persist (i.e., overload persistence) and also using a known persistence test (col. 3, line 52 – col. 4, lines 1-20).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention, to modify the combination to include the features of selecting a load control mechanism based on persistence of the load in the base station, as suggested by Cheng, since such a modification would provide the wireless communication network to control the load by different methods when considered necessary according to the load persistence in the base station (col. 3, lines 56-62).

And, Nagarajan teaches that it is well known in the art that quality-of-service criteria is used to measure the effectiveness of call admission control policies to for example minimize the new call blocking and handoff call blocking probabilities in a wireless communication network, therefore, providing a better quality of service to the wireless users. In an operational wireless network needs to ensure that the QOS requirements are being met on an ongoing basis and to do this it might be necessary to vary the parameters of an admission control policy, as for example, the traffic load varies (col. 1, lines 26-60; col. 4, lines 46-60).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention, to modify the combination to include the features of selecting a load control mechanism based on quality of service QoS rules, as suggested by Nagarajan, because it is well known in the art that wireless networks must meet quality of service requirements on an ongoing basis and deal with load variations while satisfying QoS requirements in order to provide a good quality of service to wireless users.

**Regarding claim 22**, the combination of Gandhi, Lee, Jang, Cheng, and Nagarajan disclose the base station of claim 21, in addition Gandhi discloses further comprising a receiver (Figure 1; Receiver 14), and wherein one of the parameters is a function of receiver stability, the processor being further configured to detect the overload as a result of a receiver stability estimate exceeding the threshold (col.2, line 54 – col.3, lines 1-5; col.4, lines 58-62; col.3, lines 23-29, 36-42; col.4, lines 4-7; the base station measures a first performance indicator, i.e. parameter, which is the interference rise over the background noise that is a measure of signal quality or reliability over a defined coverage area for the reverse link and is compared with a blocking threshold that represents a control overload benchmark, therefore if the interference rise over the background noise exceeds the blocking threshold the system is judged to be overloaded).

But, Gandhi does not particularly disclose wherein an overload condition is detected as a result of the first performance indicator (i.e., one of the parameters) <u>crossing the threshold for a period of time</u>.

However, this feature is well known in the art and Lee is evidence of the fact. Lee teaches a overload control method in where the control process determines an overload condition by for example measuring a processor occupancy rate (i.e., parameter) and if the measured processor occupancy rate is maintained for a prescribed time above a reference value (i.e., exceeding the

threshold for a period of time), the control process judges that an access network is in an overload state (p.0054; p.0056).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention, to modify Gandhi to include the feature of detecting an overload condition when a parameter crosses a threshold for a period of time, as suggested by Lee, because this assures that the system is in fact overloaded to avoid premature actions for relieving the overload condition when the system is not really overloaded.

**Regarding claim 33**, the combination of Gandhi, Lee, Jang, Cheng, and Nagarajan disclose the base station of claim 21, in addition Gandhi discloses further comprising a receiver and transmitter, and wherein the processor is further configured to support communications with the communication devices, and wherein one of the parameters is a function of receiver stability (col.2, line 54 – col.3, lines 1-5; col.4, lines 58-62; col.3, lines 23-29, 36-42; col.4, lines 4-7; the base station measures a first performance indicator, i.e. parameter, which is the interference rise over the background noise that is a measure of signal quality or reliability over a defined coverage area for the reverse link and is compared with a blocking threshold that represents a control overload benchmark, therefore if the interference rise over the background noise exceeds the blocking threshold the system will be overloaded).

**Regarding claim 39**, Gandhi disclose a method for communications, comprising: communicating, from a base station, with a plurality of communication devices, the communications placing a load on the base station; monitoring a plurality of parameters each relating to the load on the base station (col.2, lines 26-32; the base station includes a pair of measurers for measuring, i.e. monitoring, system performance indicators); and detecting an overload as a result of one of the parameters crossing a threshold (col.2, lines 54 – col.3, lines 1-5; col.4, lines 47 – col.5, lines 1-10;

col.9, lines 30-33; the base station establishes a blocking threshold upon the measured second performance indicator that represent an overload control threshold for preventing overloading of the wireless communication systems with active subscribers stations, therefore, when the first performance indicator exceeds the blocking threshold the wireless communication system block or reject calls because the system is overloaded).

But, Gandhi does not particularly disclose wherein an overload condition is detected as a result of the first performance indicator (i.e., one of the parameters) crossing the threshold for an entire period of time, and reducing the load on the base station using a plurality of control mechanisms based on the type and degree of the load on the base station.

However, these features are well known in the art and Lee is evidence of the fact. Lee teaches an overload control method that includes judging whether an access network (i.e., base station) is overloaded and restricting an originating call and a termination call (i.e., control mechanisms) according to the determined class (i.e., type) during overload, in addition the overload control can be discriminately performed according to a degree of the overload so that the overload control method can effectively cope with the overload situation (see abstract; p.0033-0036). The overload control processes periodically checks whether the access network is overloaded, and when is indeed overloaded, a call (i.e., terminating call or originating call) is discriminately restricted according to a degree of overload, furthermore, the overload control process can classify, for example, 24 classes (i.e., types) of overload according to a overload degree and restrict at least one of an originating call and a termination call processed on the basis of each class (p.0051-0052; Fig. 6). The control process determines an overload condition by for example measuring a processor occupancy rate (i.e., parameter) and if the measured processor occupancy rate is maintained for a

prescribed time above a reference value (i.e., crossing the threshold for an entire period of time), the control process judges that an access network is in an overload state (p.0054; p.0056).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to modify Gandhi to include the feature of detecting overload as a result of one of the parameters crossing the threshold for an entire period of time, as suggested by Lee, in order to assure that the system is in fact overloaded to avoid premature actions for relieving the overload condition when the system is not really overloaded.

Furthermore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to modify Gandhi to include the feature of reducing the load on the base station using a plurality of control mechanism based on the type and degree of the load on the base station, as suggested by Lee, in order to discriminately perform an overload control according to a degree and class of the overload so that the overload control method can effectively cope with the overload situation, and in addition to effectively manage the resources at the base station (abstract; p.0033-0034; p.0083).

Yet, the combination of Gandhi and Lee does not expressly disclose wherein the control mechanism used to control the load is also selected based on the type of application running in the base station, the persistence of the load on the base station and one or more quality of service (QoS) rules.

However, these parameters are well known in the art to influence the decision of controlling the load in a communication system as taught by Jang, Cheng, and Nagarajan.

Jang teaches a method and system for limiting or controlling access in communication networks during overload conditions. Once the network (i.e., BSC or BS) is aware of the overload condition, it begins to analyze the condition to determine the proper course of action, and when it

determines that access control should implemented, it then decides which type of application/call (i.e., voice, data, facsimile, etc.) to control. For example, if the overload condition is light to moderate, a decision might be to control or limit access to all data services, but allow voice services to continue, in another situation, the network may limit access to all digital facsimiles services (p.0024-0026, and 0029-0030).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention, to modify the combination to include the features of selecting a load control mechanism based on the type of application, as suggested by Jang, since such a modification would provide the wireless communication network to limit or control different types of application in order to reduce the overload conditions.

Cheng teaches a method for controlling call processing overload at a base station by a "Two-Phase" overload control scheme that first reduces unnecessary user handoff activities in the base station, and then further reducing busy-hour call attempts (BHCA) traffic if processing overload conditions persist (i.e., overload persistence) and also using a known persistence test (col. 3, line 52 – col. 4, lines 1-20).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention, to modify the combination to include the features of selecting a load control mechanism based on persistence of the load in the base station, as suggested by Cheng, since such a modification would provide the wireless communication network to control the load by different methods when considered necessary according to the load persistence in the base station (col. 3, lines 56-62).

And, Nagarajan teaches that it is well known in the art that quality-of-service criteria is used to measure the effectiveness of call admission control policies to for example minimize the new call

blocking and handoff call blocking probabilities in a wireless communication network, therefore, providing a better quality of service to the wireless users. In an operational wireless network needs to ensure that the QOS requirements are being met on an ongoing basis and to do this it might be necessary to vary the parameters of an admission control policy, as for example, the traffic load varies (col. 1, lines 26-60; col. 4, lines 46-60).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention, to modify the combination to include the features of selecting a load control mechanism based on quality of service QoS rules, as suggested by Nagarajan, because it is well known in the art that wireless networks must meet quality of service requirements on an ongoing basis and deal with load variations while satisfying QoS requirements in order to provide a good quality of service to wireless users.

6. **Claim 10** is rejected under 35 U.S.C. 103(a) as being unpatentable over GANDHI et al. in views of LEE, JANG et al., CHENG et al., and NAGARAJAN et al., and further in view of PADOVANI et al. (US 6,442,398 B1).

**Regarding claim 10**, the combination of Gandhi, Lee, Jang, Cheng, and Nagarajan disclose the apparatus of claim 1, but does not particularly disclose wherein one of the parameters comprises a number of the communication devices in communication with the base station.

However, Padovani teaches that a simple means for determining reverse link loading is to simply count the number of active users in the base station (col.4, lines 32-34). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to modify the combination to monitor a parameter comprising of monitoring a number of the communication devices in communication with the base station, as suggested by Padovani, because is conventional and well known in the art method for determining a reverse link loading and simple to implement.

7. **Claims 4, 5, 24, and 25** are rejected under 35 U.S.C. 103(a) as being unpatentable over GANDHI et al. in views of LEE, JANG et al., CHENG et al., and NAGARAJAN et al., and further in view of LEE et al. (US 2003/0125068 A1), hereinafter Lee '068.

**Regarding claim 4**, the combination of Gandhi, Lee, Jang, Cheng, and Nagarajan disclose the apparatus of claim 3, but does not particularly disclose further comprising means for generating power control commands for each of the communication devices, and adjusting the threshold as a function of the power control commands. However, Lee '068 discloses a method of performing power control in a mobile communication system, wherein the base station generates power control commands based on a power control threshold value for a first terminal and adjusted according to a communication environment (p.0012-0020; p.0029-0037).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to modify the combination to incorporate means for generating power control commands for each of the communication devices and adjust a threshold as a function of the power control commands, as suggested by Lee '068, in order to reduce signal interference in the system.

**Regarding claim 5**, the combination of Gandhi, Lee, Jang, Cheng, Nagarajan and Lee '068 disclose the apparatus of claim 4, in addition Lee '068 discloses further comprising means for monitoring the communications from each of the communication devices to detect errors, and wherein the adjustment of the threshold is further a function of the detected errors (p.0038-0039).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to modify the combination to incorporate means for monitoring the communication from the communication devices to detect errors and adjust the threshold as a function of the detected errors, as suggested by Lee '068, in order to decrease for example the frame errors of voice data.

**Regarding claim 24**, the combination of Gandhi, Lee, Jang, Cheng, and Nagarajan disclose the base station of claim 22, but does not particularly disclose wherein the processor is further configured to generate power control commands for each of the communication devices, and adjust the threshold as a function of the power control commands. However, Lee '068 discloses a method of performing power control in a mobile communication system, wherein the base station generates power control commands based on a power control threshold value for a first terminal and adjusted according to a communication environment (p.0012-0020; p.0029-0037).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to modify the combination to configure the processor to generate power control commands and adjust a threshold as a function of the power control command, as suggested by Lee '068, in order to reduce signal interference in the system and avoid degradation of the signal quality.

**Regarding claim 25**, the combination of Gandhi, Lee, Jang, Cheng, Nagarajan, and Lee '068 disclose the base station of claim 24, in addition Lee '068 discloses wherein the processor is further configured to monitor communications from the communication devices to detect errors,

and wherein the adjustment of the threshold by the processor is further a function of the detected errors (p.0038-0039). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to modify the combination to include the features of monitoring the communication from the communication devices to detect errors and adjust the threshold as a function of the detected errors, as suggested by Lee '068, in order to decrease for example the frame errors of voice data.

8. **Claims 7-9, and 26-28** are rejected under 35 U.S.C. 103(a) as being unpatentable over GANDHI et al. in views of LEE, JANG et al., CHENG et al., and NAGARAJAN et al., and further in view of LAAKSO (US 2003/0003921 A1).

**Regarding claim 7**, the combination of Gandhi, Lee, Jang, Cheng, and Nagarajan disclose the apparatus of claim 1, but does not particularly disclose wherein one of the parameters comprises transmission power requirements for a base station transmitter, the transmission power requirements being derived from feedback from the communication devices.

However, Laakso teaches a method for traffic load control in a telecommunication network comprising the steps of setting a first reference load value for the load of a respective cell (abstract, lines 1-11); the method measures the parameter PrxTotal which is the total received power in the uplink measured on cell basis (Page 3, Table), and establishes an overload condition if the PrxTotal exceeds the overload threshold PrxThreshold (p.0071; p.0074).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to modify the combination to incorporate the feature of monitoring transmission power requirements for a base station transmitter, as suggested by Laakso, because is a parameter well known in the art used to estimate and control the state of congestion of a communication system due to wireless communication devices.

**Regarding claim 8**, the combination of Gandhi, Lee, Jang, Cheng, Nagarajan, and Laakso disclose the apparatus of claim 7, in addition Laakso discloses wherein the transmission power requirements comprises transmission power requirements for a plurality of reverse power control (RPC) channels, each of the RPC channels being assigned to one of the communication devices (Page 3, Table; the method measures the PrxTotal which is the total received power in the uplink, i.e. reverse channels). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to modify the combination to include the features of wherein the transmission power requirements comprises transmission power requirements for a plurality of reverse power control channels, as suggested by Laakso, because it is conventional and well known in the art that communication systems establishes reception power requirements to ensure the stability of the network.

**Regarding claim 9**, the combination of Gandhi, Lee, Jang, Cheng, Nagarajan and Laakso disclose the apparatus of claim 7,in addition Laakso discloses wherein the overload is detected as a result of the transmission power requirements exceeding a maximum transmission power capability of the base station transmitter (p.0123, lines 1-9). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to modify the combination to include the features of detecting an overload condition as a result of the transmission power requirements exceeding a maximum transmission power capability, as suggested by Laakso, because when the transmission power is determined to be too much (i.e., exceeding a maximum transmission capability), the system becomes unstable, indicating an overload condition.

**Regarding claim 26**, the combination of Gandhi, Lee, Jang, Cheng, and Nagarajan disclose the base station of claim 21, in addition Gandhi discloses further comprising a transmitter (Figure 1; Transmitter 12), but Gandhi does not particularly disclose wherein one of the monitored parameters

is a function of the transmission power requirements for the transmitter, the processor being further configured to derive transmission power requirements from feedback from the communication devices.

However, Laakso teaches a method for traffic load control in a telecommunication network comprising the steps of setting a first reference load value for the load of a respective cell (abstract, lines 1-11); the method measures the parameter PrxTotal which is the total received power in the uplink measured on cell basis (Page 3, Table), and establishes an overload condition if the PrxTotal exceeds the overload threshold PrxThreshold (p.0071; p.0074). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to modify the combination to include the features of monitoring transmission power requirements for a base station transmitter, as suggested by Laakso, because is a parameter conventional and well known in the art, used to estimate and control the state of congestion of a communication system due to wireless communication devices.

**Regarding claim 27**, the combination of Gandhi, Lee, Jang, Cheng, Nagarajan, and Laakso disclose the base station of claim 26, in addition Laakso discloses wherein the transmission power requirements comprise transmission power requirements for a plurality of reverse power control (RPC) channels, each of the RPC channels being assigned to one of the communication devices (Page 3, Table; the method measures the PrxTotal which is the total received power in the uplink, i.e. reverse channels). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to modify the combination to include the features of wherein the transmission power requirements comprises transmission power requirements for a plurality of reverse power control channels, as suggested by Laakso, because it is well known in the art that

communication system's establishes reception power requirements to ensure the stability of the network.

**Regarding claim 28**, the combination of Gandhi, Lee, Jang, Cheng, Nagarajan, and Laakso disclose the base station of claim 26, in addition Laakso discloses wherein the overload is detected as a result of the transmission power requirements exceeding a maximum transmission power capability of the base station transmitter (p.0123, lines 1-9). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to modify the combination to include the feature of detecting an overload condition as a result of the transmission power requirements exceeding a maximum transmission power capability, as suggested by Laakson, because when the transmission power is determined to be too much (i.e., exceeding a maximum transmission capability), the system becomes unstable, indicating an overload condition.

9. **Claims 12 and 30** are rejected under 35 U.S.C. 103(a) as being unpatentable over GANDHI et al. in views of LEE, JANG et al., CHENG et al., and NAGARAJAN et al., and further in view of VOLFTSUN et al. (US 6,707,792 B1).

**Regarding claim 12**, the combination of Gandhi, Lee, Jang, Cheng, and Nagarajan disclose the apparatus of claim 1, but fails to particularly disclose comprising means for detecting a second degree of overload as a result of said one of the parameters crossing a second threshold.

However, Volftsun teaches a method and apparatus for reducing overload conditions of a node of a communication system, it establishes pairs of overload thresholds values and each overload threshold correspond to the current saturation level (abstract). The pair of thresholds corresponds to an upper and a lower overload level values and correspond to saturation conditions in the node (col.2, line 34 – col. 3, lines 1-7). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to modify the combination to incorporate means

for detecting a second degree of overload level as a result of one of the parameters crossing a second threshold, as suggested by Volftsun, because a second threshold may correspond to an upper overload threshold value that indicates a saturation condition in the base station which is an indication of overload that is higher than the overload resulting from crossing a lower overload threshold value.

**Regarding claim 30**, the combination of Gandhi, Lee, Jang, Cheng, and Nagarajan disclose the base station of claim 21, but fails to particularly disclose wherein the processor is further configured to detect a second degree overload as a result of the one of the parameters crossing a second threshold.

However, Volftsun teaches a method and apparatus for reducing overload conditions of a node of a communication system, it establishes pairs of overload thresholds values and each overload threshold correspond to the current saturation level (abstract). The pair of thresholds corresponds to an upper and a lower overload level values and correspond to saturation conditions in the node (col.2, line 34 – col. 3, lines 1-7).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to modify the combination to include the features of detecting a second degree of overload level as a result of one of the parameters crossing a second threshold, as suggested by Volftsun, because a second threshold may correspond to an upper overload threshold value that indicates a saturation condition in the base station which is an indication of overload that is higher than the overload resulting from crossing a lower overload threshold value.

10. **Claims 13 and 31** are rejected under 35 U.S.C. 103(a) as being unpatentable over GANDHI et al. in views of LEE, JANG et al., CHENG et al., and NAGARAJAN et al., and further in view of DJURIC (US 6,785,546 B1).

**Regarding claim 13**, the combination of Gandhi, Lee, Jang, Cheng, and Nagarajan disclose the apparatus of claim 1, but fails to particularly disclose wherein one of the parameters comprises loading on processing resources used for communication with the communication devices.

However, Djuric teaches a method and apparatus that monitors the traffic (i.e. load) in an application processor used of a wireless communication network in order to maintain call processing related traffic below a predefined threshold to avoid overload (abstract; col.1, line 50-col.2, lines 1-9).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to modify the combination to monitor the parameter comprising loading on processing resources used for communication, as suggested by Djuric, because monitoring the processor traffic provides a measure for maintaining the traffic below a predefined threshold to improve the overall performance of the base station processor.

**Regarding claim 31**, the combination of Gandhi, Lee, Jang, Cheng, and Nagarajan disclose the base station of claim 21, in addition Gandhi discloses wherein the processor is further configured to support communications with the communication devices, but fails to particularly disclose wherein one of the parameters comprises loading on processing resources used for communication with the communication devices.

However, Djuric teaches a method and apparatus that monitors the traffic (i.e. load) in an application processor used of a wireless communication network in order to maintain call processing related traffic below a predefined threshold to avoid overload (abstract; col.1, line 50-col.2, lines 1-9).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to modify the combination to monitor the parameter comprising loading on

processing resources used for communication, as suggested by Djuric, because monitoring the processor traffic provides a measure for maintaining the traffic below a predefined threshold to improve the overall performance of the base station processor.

11. **Claims 15 and 35** are rejected under 35 U.S.C. 103(a) as being unpatentable over GANDHI et al. in view of LEE, JANG et al., CHENG et al., and NAGARAJAN et al. , and further in views of LAAKSO, and DJURIC.

**Regarding claim 15**, the combination of Gandhi, Lee, Jang, Cheng, and Nagarajan disclose the apparatus of claim 1, in addition Gandhi discloses wherein one of the parameters comprises receiver stability at the base station (col.2, line 54 – col.3, lines 1-5; col.4, lines 58-62; col.3, lines 23-29, 36-42; col.4, lines 4-7; the base station measures a first performance indicator, i.e. parameter, which is the interference rise over the background noise that is a measure of signal quality or reliability over a defined coverage area for the reverse link and is compared with a blocking threshold that represents a control overload benchmark, therefore, when the interference rise over the background noise exceeds the blocking threshold the system is judged to be overloaded).

But, the combination fails to particularly disclose wherein a second one of the parameters measured at the base station comprises base station transmission power requirements derived from feedback from the communication devices.

However, Laakso teaches a method for traffic load control in a telecommunication network comprising the steps of setting a first reference load value for the load of a respective cell (abstract, lines 1-11); the method measures the parameter PrxTotal which is the total received power in the uplink measured on cell basis (Page 3, Table), and establishes an overload condition if the PrxTotal exceeds the overload threshold PrxThreshold (p.0071; p.0074).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to modify the combination to include the features of monitoring a second parameter comprising transmission power requirements for a base station transmitter, as suggested by Laakso, because is a parameter conventional and well known in the art, used to estimate and control the state of congestion of a communication system due to wireless communication devices.

Nevertheless, the combination of Gandhi, Lee, and Laakso fails to particularly disclose monitoring a third parameter that comprises loading on processing resources used for communication with the communication devices.

However, Djuric teaches a method and apparatus that monitors the traffic (i.e. load) in an application processor used of a wireless communication network in order to maintain call processing related traffic below a predefined threshold to avoid overload (abstract; col.1, line 50-col.2, lines 1-9). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to modify Gandhi to monitor a third parameter that comprise loading on processing resources used for communication, as suggested by Djuric, because monitoring the processor traffic provides a measure for maintaining the traffic below a predefined threshold to improve the overall performance of the base station processor.

**Regarding claim 35**, the combination of Gandhi, Lee, Jang, Cheng, and Nagarajan disclose the base station of claim 21, in addition Gandhi discloses further comprising a receiver and transmitter (Figure 1), and wherein the processor is further configured to support communications with the communication devices, and wherein one of the parameters is a function of receiver stability (col.2, line 54 – col.3, lines 1-5; col.4, lines 58-62; col.3, lines 23-29, 36-42; col.4, lines 4-7; the base station measures a first performance indicator, i.e. parameter, which is the interference rise over the background noise that is a measure of signal quality or reliability over a defined coverage

area for the reverse link and is compared with a blocking threshold that represents a control overload benchmark, therefore if the interference rise over the background noise exceeds the blocking threshold the system will be overloaded).

However, the combination fails to particularly disclose wherein the second one of the parameters is a function of transmission power requirements for the transmitter.

However, Laakso teaches a method for traffic load control in a telecommunication network comprising the steps of setting a first reference load value for the load of a respective cell (abstract, lines 1-11); the method measures the parameter PrxTotal which is the total received power in the uplink measured on cell basis (Page 3, Table), and establishes an overload condition if the PrxTotal exceeds the overload threshold PrxThreshold (p.0071; p.0074).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to modify the combination to include the features of monitoring a second parameter comprising transmission power requirements for a base station transmitter, as suggested by Laakso, because is a parameter conventional and well known in the art, used to estimate and control the state of congestion of a communication system due to wireless communication devices.

Nevertheless, the combination fails to particularly disclose monitoring a third parameter that comprises loading on processing resources used for communication with the communication devices.

However, Djuric teaches a method and apparatus that monitors the traffic (i.e. load) in an application processor used of a wireless communication network in order to maintain call processing related traffic below a predefined threshold to avoid overload (abstract; col.1, line 50-col.2, lines 1-9). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to modify the combination to include the features of monitoring a third parameter

comprising loading on processing resources used for communication, as suggested by Djuric, because monitoring the processor traffic provides a measure for maintaining the traffic below a predefined threshold to improve the overall performance of the base station processor.

12. **Claims 16 and 36** are rejected under 35 U.S.C. 103(a) as being unpatentable over GANDHI et al. in views of LEE, JANG et al., CHENG et al., NAGARAJAN et al., LAAKSO, and DJURIC, and further in view of PADOVANI.

**Regarding claim 16**, the combination of Gandhi, Lee, Jang, Cheng, Nagarajan, Laakso, and Djuric disclose apparatus of claim 15, but the combination fails to particularly disclose wherein a fourth one of the parameters comprises a number of the communication devices in communication with the base station.

However, Padovani teaches that a simple means for determining reverse link loading is to simply count the number of active users in the base station (col.4, lines 32-34).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to modify the combination to include the features of monitoring a fourth parameter comprising a number of the communication devices in communication with the base station, as suggested by Padovani, because is conventional and well known in the art method for determining a reverse link loading and simple to implement.

**Regarding claim 36**, the combination of Gandhi, Lee, Jang, Cheng, Nagarajan, Laakso, and Djuric disclose the base station of claim 35, but the combination fails to particularly disclose wherein a fourth one of the parameters is a function of the number of communication devices in communication with the base station. However, Padovani teaches that a simple means for determining reverse link loading is to simply count the number of active users in the base station (col.4, lines 32-34).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to modify the combination to include the features of monitoring a fourth parameter comprising a number of the communication devices in communication with the base station, as suggested by Padovani, because is conventional and well known in the art method for determining a reverse link loading and simple to implement.

13. **Claim 18** is rejected under 35 U.S.C. 103(a) as being unpatentable over GANDHI et al. in views of LEE, JANG et al., CHENG et al., and NAGARAJAN et al., and further in view of BENDER et al. (US 2002/0155852 A1).

**Regarding claim 18**, the combination of Gandhi, Lee, Jang, Cheng, and Nagarajan disclose the apparatus as in claim 1, but the combination fails to particularly disclose wherein one of the

means for implementing a control mechanism comprises: means for determining idle users; and means for bumping service to idle users.

However, this control mechanism is well known in the art and Bender is evidence of the fact. Bender teaches a method for supervising connections with wireless access terminals and releasing the access terminals when they become idle for a predetermined period of time (p.0036, lines 1-11).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to modify the combination to incorporate a control mechanism comprising means for determining idle users and means for bumping service to idle users, as suggested by Bender, in order to free and maximize the RF resources for use by other access terminals.

14. **Claims 6 and 23** are rejected under 35 U.S.C. 103(a) as being unpatentable over GANDHI et al. in views of LEE, JANG et al., CHENG et al., NAGARAJAN et al., and GEHI et al. (US 6,134,216).

**Regarding claim 6**, Gandhi discloses an apparatus for communications, comprising:

means for communicating, from a base station, with a plurality of communication devices, the communications placing a load on the base station (Figure 1 shows a base station 10 that communicates with a subscriber station 24 though its receiver, although only one subscriber station is shown it is known that a base station can communicate with a plurality of subscriber stations and each place a load in the system);

means for monitoring a plurality of parameters each relating to the load on the base station (col.2, lines 26-32; the base station includes a pair of measurers for measuring, i.e. monitoring, system performance indicators); wherein one of the parameters comprises receiver stability at the base station, and the overload is detected as a result of a receiver stability estimate exceeding the

threshold (col.2, line 54 – col.3, lines 1-5; col.4, lines 58-62; col.3, lines 23-29, 36-42; col.4, lines 4-7; the base station measures a first performance indicator, i.e. parameter, which is the interference rise over the background noise that is a measure of signal quality or reliability over a defined coverage area for the reverse link and is compared with a blocking threshold that represents a control overload benchmark, therefore, when the interference rise over the background noise exceeds the blocking threshold the system is judged to be overloaded).

But, Gandhi fails to particularly disclose wherein the overload is detected as a result of the first performance indicator (i.e., one of the parameters) crossing the threshold for a period of time; and means for implementing a plurality of control mechanisms to reduce the load on the base station, wherein the control mechanism used to reduce the load on the base station is selected based on the type and degree of the load on the base station.

However, these features are well known in the art and Lee is evidence of the fact. Lee teaches an overload control method that includes judging whether an access network (i.e., base station) is overloaded and restricting an originating call and a termination call (i.e., control mechanisms) according to the determined class (i.e., type) during overload, in addition the overload control can be discriminately performed according to a degree of the overload so that the overload control method can effectively cope with the overload situation (see abstract; p.0033-0036). The overload control processes periodically checks whether the access network is overloaded, and when is indeed overloaded, a call (i.e., terminating call or originating call) is discriminately restricted according to a degree of overload, furthermore, the overload control process can classify, for example, 24 classes (i.e., types) of overload according to a overload degree and restrict at least one of an originating call and a termination call processed on the basis of each class (p.0051-0052; Fig. 6). The control process determines an overload condition by for example measuring a processor

occupancy rate (i.e., parameter) and if the measured processor occupancy rate is maintained for a prescribed time above a reference value (i.e., crossing the threshold for an entire period of time), the control process judges that an access network is in an overload state (p.0054; p.0056).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to modify Gandhi to include the feature of detecting overload as a result of one of the parameters crossing the threshold for a period of time, as suggested by Lee, in order to assure that the system is in fact overloaded to avoid premature actions for relieving the overload condition when the system is not really overloaded.

Furthermore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to modify Gandhi to include the feature of reducing the load on the base station using a plurality of control mechanism based on the type and degree of the load on the base station, as suggested by Lee, in order to discriminately perform an overload control according to a degree and class of the overload so that the overload control method can effectively cope with the overload situation, and in addition to effectively manage the resources at the base station (abstract; p.0033-0034; p.0083)

Nevertheless, the combination of Gandhi and Lee fails to particularly disclose means for detecting a second degree overload as a result of the parameter exceeding the threshold for a second period of time longer than the first period of time.

However, this feature is known in the art and Gehi is evidence of the fact. Gehi teaches a method of responding to overload in a real time system such as a telecommunication system, in where overload is measured through the use of a control parameter and the overload indication is reduced to one of a plurality of levels (i.e., degrees), the level corresponding to a longer term (i.e., second degree) more serious overload are based on control measurements over a longer period of

time than the less serious short term (i.e., first degree) overload, and therefore the actions taken for relieving overloading are distinguished by the level of overload (abstract; col.2, lines 5-36).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention, to modify Gandhi to include the feature of detecting a second degree overload as a result of a parameter (i.e., receiver stability) exceeding a threshold for a period of time longer than the first period, as suggested by Gehi, because this distinguishes the severity of the overload condition and the control actions to be performed according to the level of overload in the system.

Yet, the combination of Gandhi, Lee, and Gehi does not expressly disclose wherein the control mechanism used to control the load is also selected based on the type of application running in the base station, the persistence of the load on the base station and one or more quality of service (QoS) rules.

However, these parameters are well known in the art to influence the decision of controlling the load in a communication system as taught by Jang, Cheng, and Nagarajan.

Jang teaches a method and system for limiting or controlling access in communication networks during overload conditions. Once the network (i.e., BSC or BS) is aware of the overload condition, it begins to analyze the condition to determine the proper course of action, and when it determines that access control should implemented, it then decides which type of application/call (i.e., voice, data, facsimile, etc.) to control. For example, if the overload condition is light to moderate, a decision might be to control or limit access to all data services, but allow voice services to continue, in another situation, the network may limit access to all digital facsimiles services (p.0024-0026, and 0029-0030).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention, to modify the combination to include the features of selecting a load control

mechanism based on the type of application, as suggested by Jang, since such a modification would provide the wireless communication network to limit or control different types of application in order to reduce the overload conditions.

Cheng teaches a method for controlling call processing overload at a base station by a "Two-Phase" overload control scheme that first reduces unnecessary user handoff activities in the base station, and then further reducing busy-hour call attempts (BHCA) traffic if processing overload conditions persist (i.e., overload persistence) and also using a known persistence test (col. 3, line 52 – col. 4, lines 1-20).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention, to modify the combination to include the features of selecting a load control mechanism based on persistence of the load in the base station, as suggested by Cheng, since such a modification would provide the wireless communication network to control the load by different methods when considered necessary according to the load persistence in the base station (col. 3, lines 56-62).

And, Nagarajan teaches that it is well known in the art that quality-of-service criteria is used to measure the effectiveness of call admission control policies to for example minimize the new call blocking and handoff call blocking probabilities in a wireless communication network, therefore, providing a better quality of service to the wireless users. In an operational wireless network needs to ensure that the QOS requirements are being met on an ongoing basis and to do this it might be necessary to vary the parameters of an admission control policy, as for example, the traffic load varies (col. 1, lines 26-60; col. 4, lines 46-60).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention, to modify the combination to include the features of selecting a load control

mechanism based on quality of service QoS rules, as suggested by Nagarajan, because it is well known in the art that wireless networks must meet quality of service requirements on an ongoing basis and deal with load variations while satisfying QoS requirements in order to provide a good quality of service to wireless users.

**Regarding claim 23**, Gandhi discloses a base station configured to support communications with a plurality of communication devices, the communications placing a load on the base station, the base station comprising: a receiver (Figure 1; Receiver 14); a processor configured to monitor a plurality of parameters each relating to the load on the base station (col.2, lines 26-32; the base station includes a pair of measurers for measuring, i.e. monitoring, system performance indicators), wherein one of the parameters is a function of receiver stability, the processor being further configured to detect the overload as a result of a receiver stability estimate exceeding the threshold (col.2, line 54 – col.3, lines 1-5; col.4, lines 58-62; col.3, lines 23-29, 36-42; col.4, lines 4-7; the base station measures a first performance indicator, i.e. parameter, which is the interference rise over the background noise that is a measure of signal quality or reliability over a defined coverage area for the reverse link and is compared with a blocking threshold that represents a control overload benchmark, therefore, when the interference rise over the background noise exceeds the blocking threshold the system is judged to be overloaded).

But, Gandhi fails to particularly disclose wherein the overload is detected as a result of the first performance indicator (i.e., one of the parameters) <u>crossing the threshold for a period of time</u>; and wherein the processor is further configured to reduce the load on the base station using a plurality of control mechanisms based on the type and degree of the load on the base station.

However, these features are well known in the art and Lee is evidence of the fact. Lee teaches an overload control method that includes judging whether an access network (i.e., base

station) is overloaded and restricting an originating call and a termination call (i.e., control mechanisms) according to the determined class (i.e., type) during overload, in addition the overload control can be discriminately performed according to a degree of the overload so that the overload control method can effectively cope with the overload situation (see abstract; p.0033-0036). The overload control processes periodically checks whether the access network is overloaded, and when is indeed overloaded, a call (i.e., terminating call or originating call) is discriminately restricted according to a degree of overload, furthermore, the overload control process can classify, for example, 24 classes (i.e., types) of overload according to a overload degree and restrict at least one of an originating call and a termination call processed on the basis of each class (p.0051-0052; Fig. 6). The control process determines an overload condition by for example measuring a processor occupancy rate (i.e., parameter) and if the measured processor occupancy rate is maintained for a prescribed time above a reference value (i.e., crossing the threshold for an entire period of time), the control process judges that an access network is in an overload state (p.0054; p.0056).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to modify Gandhi to include the feature of detecting overload as a result of one of the parameters crossing the threshold for a period of time, as suggested by Lee, in order to assure that the system is in fact overloaded to avoid premature actions for relieving the overload condition when the system is not really overloaded.

Furthermore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to modify Gandhi to include the feature of reducing the load on the base station using a plurality of control mechanism based on the type and degree of the load on the base station, as suggested by Lee, in order to discriminately perform an overload control according to a degree and class of the overload so that the overload control method can effectively cope with the overload

situation, and in addition to effectively manage the resources at the base station (abstract; p.0033-0034; p.0083)

However, this feature is known in the art and Gehi is evidence of the fact. Gehi teaches a method of responding to overload in a real time system such as a telecommunication system, in where overload is measured through the use of a control parameter and the overload indication is reduced to one of a plurality of levels (i.e., degrees), the level corresponding to a longer term (i.e., second degree) more serious overload are based on control measurements over a longer period of time than the less serious short term (i.e., first degree) overload, and therefore the actions taken for relieving overloading are distinguished by the level of overload (abstract; col.2, lines 5-36).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention, to modify Gandhi to include the feature of detecting a second degree overload as a result of a parameter (i.e., receiver stability) exceeding a threshold for a period of time longer than the first period, as suggested by Gehi, because this distinguishes the severity of the overload condition and the control actions to be performed according to the level of overload in the system.

Yet, the combination of Gandhi, Lee, and Gehi does not expressly disclose wherein the control mechanism used to control the load is also selected based on the type of application running in the base station, the persistence of the load on the base station and one or more quality of service (QoS) rules.

However, these parameters are well known in the art to influence the decision of controlling the load in a communication system as taught by Jang, Cheng, and Nagarajan.

Jang teaches a method and system for limiting or controlling access in communication networks during overload conditions. Once the network (i.e., BSC or BS) is aware of the overload condition, it begins to analyze the condition to determine the proper course of action, and when it

determines that access control should implemented, it then decides which type of application/call (i.e., voice, data, facsimile, etc.) to control. For example, if the overload condition is light to moderate, a decision might be to control or limit access to all data services, but allow voice services to continue, in another situation, the network may limit access to all digital facsimiles services (p.0024-0026, and 0029-0030).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention, to modify the combination to include the features of selecting a load control mechanism based on the type of application, as suggested by Jang, since such a modification would provide the wireless communication network to limit or control different types of application in order to reduce the overload conditions.

Cheng teaches a method for controlling call processing overload at a base station by a "Two-Phase" overload control scheme that first reduces unnecessary user handoff activities in the base station, and then further reducing busy-hour call attempts (BHCA) traffic if processing overload conditions persist (i.e., overload persistence) and also using a known persistence test (col. 3, line 52 – col. 4, lines 1-20).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention, to modify the combination to include the features of selecting a load control mechanism based on persistence of the load in the base station, as suggested by Cheng, since such a modification would provide the wireless communication network to control the load by different methods when considered necessary according to the load persistence in the base station (col. 3, lines 56-62).

And, Nagarajan teaches that it is well known in the art that quality-of-service criteria is used to measure the effectiveness of call admission control policies to for example minimize the new call

blocking and handoff call blocking probabilities in a wireless communication network, therefore, providing a better quality of service to the wireless users. In an operational wireless network needs to ensure that the QOS requirements are being met on an ongoing basis and to do this it might be necessary to vary the parameters of an admission control policy, as for example, the traffic load varies (col. 1, lines 26-60; col. 4, lines 46-60).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention, to modify the combination to include the features of selecting a load control mechanism based on quality of service QoS rules, as suggested by Nagarajan, because it is well known in the art that wireless networks must meet quality of service requirements on an ongoing basis and deal with load variations while satisfying QoS requirements in order to provide a good quality of service to wireless users.

15. **Claim 19** is rejected under 35 U.S.C. 103(a) as being unpatentable over GANDHI et al. in views of LEE, BENDER (US 2002/0155852 A1), KIM et al. (US 6,456,850 B1), JANG et al., CHENG et al., and NAGARAJAN et al.

**Regarding claim 19**, Gandhi discloses an apparatus for communications, comprising:

means for communicating, from a base station, with a plurality of communication devices, the communications placing a load on the base station (Figure 1 shows a base station 10 that communicates with a subscriber station 24 though its receiver, although only one subscriber station is shown it is known that a base station can communicate with a plurality of subscriber stations and each place a load in the system);

means for monitoring a plurality of parameters each relating to the load on the base station (col.2, lines 26-32; the base station includes a pair of measurers for measuring, i.e. monitoring, system performance indicators); and

means for detecting an overload as a result of one of the parameters crossing a threshold (col.2, lines 54 – col.3, lines 1-5; col.4, lines 47 – col.5, lines 1-10; col.9, lines 30-33; the base station establishes a blocking threshold upon the measured second performance indicator that represent an overload control threshold for preventing overloading of the wireless communication systems with active subscribers stations, therefore, when the first performance indicator exceeds the blocking threshold the wireless communication system block or reject calls because the system is overloaded);

and means for implementing a control mechanism to reduce the overload (col.2, lines 54 – col.3, lines 1-5; col.4, lines 47 – col.5, lines 1-10; col.9, lines 30-33; when the first performance indicator exceeds the blocking threshold the wireless communication system rejects calls to prevent coverage and/or performance degradation due to overload conditions).

But, Gandhi fails to particularly disclose means for implementing a plurality of control mechanisms to reduce the load on the base station, wherein the control mechanism used to reduce the load on the base station is selected based on the type and degree of the load on the base station.

However, this feature is well known in the art and Lee is evidence of the fact. Lee teaches an overload control method that includes judging whether an access network (i.e., base station) is overloaded and restricting an originating call and a termination call (i.e., control mechanisms) according to the determined class (i.e., type) during overload, in addition the overload control can be discriminately performed according to a degree of the overload so that the overload control method can effectively cope with the overload situation (see abstract; p.0033-0036). The overload control processes periodically checks whether the access network is overloaded, and when is indeed overloaded, a call (i.e., terminating call or originating call) is discriminately restricted according to a degree of overload, furthermore, the overload control process can classify, for example, 24 classes

(i.e., types) of overload according to a overload degree and restrict at least one of an originating call and a termination call processed on the basis of each class (p.0051-0052; Fig. 6).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to modify Gandhi to include the feature of reducing the load on the base station using a plurality of control mechanism based on the type and degree of the load on the base station, as suggested by Lee, in order to discriminately perform an overload control according to a degree and class of the overload so that the overload control method can effectively cope with the overload situation, and in addition to effectively manage the resources at the base station (abstract; p.0033-0034; p.0083)

But, the combination of Gandhi and Lee fails to particularly disclose wherein the first control mechanism comprises: means for determining idle users; means for bumping service to idle users; means for determining high data users; and means for bumping service to high data users.

However, these control mechanisms are well known in the art and Bender and Kim are evidence of the fact. Bender teaches a method for supervising connections with wireless access terminals and releasing the access terminals when they become idle for a predetermined period of time (p.0036, lines 1-11); and Kim teaches a method for preventing overload conditions in a communication system that performs a call load analysis to each of the individual subscribers, and the individuals subscribers whose contributions to the average call load are deemed significant (i.e., high data) are identified and removed from the system (abstract; col.8, lines 13-34).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention, to modify Gandhi and Lee to include the control mechanism comprising means for determining idle and high data users and means for bumping service to idle and high data users, as suggested by Bender and Kim, because bumping idle users free and maximize the RF resources for

use by other access terminals, and bumping high data users causes a communication system to no longer be in an overload condition.

Yet, the combination of Gandhi, Lee, Bender, and Kim does not expressly disclose wherein the control mechanism used to control the load is also selected based on the type of application running in the base station, the persistence of the load on the base station and one or more quality of service (QoS) rules.

However, these parameters are well known in the art to influence the decision of controlling the load in a communication system as taught by Jang, Kim, and Nagarajan.

Jang teaches a method and system for limiting or controlling access in communication networks during overload conditions. Once the network (i.e., BSC or BS) is aware of the overload condition, it begins to analyze the condition to determine the proper course of action, and when it determines that access control should implemented, it then decides which type of application/call (i.e., voice, data, facsimile, etc.) to control. For example, if the overload condition is light to moderate, a decision might be to control or limit access to all data services, but allow voice services to continue, in another situation, the network may limit access to all digital facsimiles services (p.0024-0026, and 0029-0030).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention, to modify the combination to include the features of selecting a load control mechanism based on the type of application, as suggested by Jang, since such a modification would provide the wireless communication network to limit or control different types of application in order to reduce the overload conditions.

Cheng teaches a method for controlling call processing overload at a base station by a "Two-Phase" overload control scheme that first reduces unnecessary user handoff activities in the base

station, and then further reducing busy-hour call attempts (BHCA) traffic if processing overload conditions persist (i.e., overload persistence) and also using a known persistence test (col. 3, line 52 – col. 4, lines 1-20).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention, to modify the combination to include the features of selecting a load control mechanism based on persistence of the load in the base station, as suggested by Cheng, since such a modification would provide the wireless communication network to control the load by different methods when considered necessary according to the load persistence in the base station (col. 3, lines 56-62).

And, Nagarajan teaches that it is well known in the art that quality-of-service criteria is used to measure the effectiveness of call admission control policies to for example minimize the new call blocking and handoff call blocking probabilities in a wireless communication network, therefore, providing a better quality of service to the wireless users. In an operational wireless network needs to ensure that the QOS requirements are being met on an ongoing basis and to do this it might be necessary to vary the parameters of an admission control policy, as for example, the traffic load varies (col. 1, lines 26-60; col. 4, lines 46-60).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention, to modify the combination to include the features of selecting a load control mechanism based on quality of service QoS rules, as suggested by Nagarajan, because it is well known in the art that wireless networks must meet quality of service requirements on an ongoing basis and deal with load variations while satisfying QoS requirements in order to provide a good quality of service to wireless users.

16. **Claim 20** is rejected under 35 U.S.C. 103(a) as being unpatentable over GANDHI et al. in views of LEE, BENDER, KIM et al., JANG et al., CHENG et al., NAGARAJAN et al., and further in view of KATOH et al. (US 5,949,757).

**Regarding claim 20**, the combination of Gandhi, Lee, Bender, Kim, Jang, Cheng, and Nagarajan disclose the apparatus as in claim 19, but fails to particularly disclose means for determining a first group of users having transferred a first amount of data; and means for bumping service to the first group of users.

However, Katoh teaches a method for monitoring packet flow in a communication system, the system includes a connection group monitor means that monitors the flows of packets transferred over the connection group and checks whether the flow of packets (i.e., amount of data) exceeds a threshold and if the flow exceeds the threshold the monitor means discard the packets (i.e., bump service to the group) so congestion does not occur (col.2, lines 24-58).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention, to modify the combination to include the control mechanism comprising determining a first group having transferred a first amount of data and bumping service to the first group, as suggested by Katoh, in order to regulate the amount of data transmitted by a group of users so congestion does not occur.

17. **Claims 11 and 29** are rejected under 35 U.S.C. 103(a) as being unpatentable over GANDHI et al. in views of LEE et al., VOLFTSUN et al., JANG et al., CHENG et al., and NAGARAJAN et al.

**Regarding claim 11**, Gandhi discloses an apparatus for communications, comprising:

means for communicating, from a base station, with a plurality of communication devices, the communications placing a load on the base station (Figure 1 shows a base station 10 that

communicates with a subscriber station 24 though its receiver, although only one subscriber station is shown it is known that a base station can communicate with a plurality of subscriber stations and each place a load in the system);

means for monitoring a plurality of parameters each relating to the load on the base station (col.2, lines 26-32; the base station includes a pair of measurers for measuring, i.e. monitoring, system performance indicators); and

means for detecting an overload as a result of one of the parameters crossing a threshold (col.2, lines 54 – col.3, lines 1-5; col.4, lines 47 – col.5, lines 1-10; col.9, lines 30-33; the base station establishes a blocking threshold upon the measured second performance indicator that represent an overload control threshold for preventing overloading of the wireless communication systems with active subscribers stations, therefore, when the first performance indicator exceeds the blocking threshold the wireless communication system block or reject calls because the system is overloaded).

But, Gandhi fails to particularly disclose means for implementing a plurality of control mechanisms to reduce the load on the base station, wherein the control mechanism used to reduce the load on the base station is selected based on the type and degree of the load on the base station.

However, this feature is well known in the art and Lee is evidence of the fact. Lee teaches an overload control method that includes judging whether an access network (i.e., base station) is overloaded and restricting an originating call and a termination call (i.e., control mechanisms) according to the determined class (i.e., type) during overload, in addition the overload control can be discriminately performed according to a degree of the overload so that the overload control method can effectively cope with the overload situation (see abstract; p.0033-0036). The overload control processes periodically checks whether the access network is overloaded, and when is indeed overloaded, a call (i.e., terminating call or originating call) is discriminately restricted according to a

degree of overload, furthermore, the overload control process can classify, for example, 24 classes (i.e., types) of overload according to a overload degree and restrict at least one of an originating call and a termination call processed on the basis of each class (p.0051-0052; Fig. 6).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to modify Gandhi to include the feature of reducing the load on the base station using a plurality of control mechanism based on the type and degree of the load on the base station, as suggested by Lee, in order to discriminately perform an overload control according to a degree and class of the overload so that the overload control method can effectively cope with the overload situation, and in addition to effectively manage the resources at the base station (abstract; p.0033-0034; p.0083)

Nevertheless, the combination of Gandhi and Lee fails to particularly disclose means for detecting a second type of overload as a result of one of the parameters crossing a second threshold.

However, Volftsun teaches a method and apparatus for reducing overload conditions of a node of a communication system that establishes pairs of overload thresholds values and each overload threshold correspond to the current saturation level (abstract).. The pair of thresholds corresponds to an upper and a lower overload level values and correspond to saturation conditions in the node (col.2, line 34 – col. 3, lines 1-7).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to modify the combination of Gandhi and Lee to include the features of detecting a second type of overload as a result of one of the parameters crossing a second threshold, as suggested by Volftsun, because a second threshold may correspond to an upper overload threshold value that indicates a saturation condition in the base station which is an indication of overload that

is higher than the overload resulting from crossing a lower overload threshold value, i.e., first type overload.

Yet, the combination of Gandhi, Lee, and Volftsun does not expressly disclose wherein the control mechanism used to control the load is also selected based on the type of application running in the base station, the persistence of the load on the base station and one or more quality of service (QoS) rules.

However, these parameters are well known in the art to influence the decision of controlling the load in a communication system as taught by Jang, Kim, and Nagarajan.

Jang teaches a method and system for limiting or controlling access in communication networks during overload conditions. Once the network (i.e., BSC or BS) is aware of the overload condition, it begins to analyze the condition to determine the proper course of action, and when it determines that access control should implemented, it then decides which type of application/call (i.e., voice, data, facsimile, etc.) to control. For example, if the overload condition is light to moderate, a decision might be to control or limit access to all data services, but allow voice services to continue, in another situation, the network may limit access to all digital facsimiles services (p.0024-0026, and 0029-0030).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention, to modify the combination to include the features of selecting a load control mechanism based on the type of application, as suggested by Jang, since such a modification would provide the wireless communication network to limit or control different types of application in order to reduce the overload conditions.

Cheng teaches a method for controlling call processing overload at a base station by a "Two-Phase" overload control scheme that first reduces unnecessary user handoff activities in the base

station, and then further reducing busy-hour call attempts (BHCA) traffic if processing overload conditions persist (i.e., overload persistence) and also using a known persistence test (col. 3, line 52 – col. 4, lines 1-20).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention, to modify the combination to include the features of selecting a load control mechanism based on persistence of the load in the base station, as suggested by Cheng, since such a modification would provide the wireless communication network to control the load by different methods when considered necessary according to the load persistence in the base station (col. 3, lines 56-62).

And, Nagarajan teaches that it is well known in the art that quality-of-service criteria is used to measure the effectiveness of call admission control policies to for example minimize the new call blocking and handoff call blocking probabilities in a wireless communication network, therefore, providing a better quality of service to the wireless users. In an operational wireless network needs to ensure that the QOS requirements are being met on an ongoing basis and to do this it might be necessary to vary the parameters of an admission control policy, as for example, the traffic load varies (col. 1, lines 26-60; col. 4, lines 46-60).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention, to modify the combination to include the features of selecting a load control mechanism based on quality of service QoS rules, as suggested by Nagarajan, because it is well known in the art that wireless networks must meet quality of service requirements on an ongoing basis and deal with load variations while satisfying QoS requirements in order to provide a good quality of service to wireless users.

**Regarding claim 29**, the claim is rejected over the same reasons stated about claim 11 as it recites the same limitations of claim 11. See remarks about claim 11 above.

18. **Claims 32 and 34** are rejected under 35 U.S.C. 103(a) as being unpatentable over GANDHI et al. in views of ANDERSSON (US 5,697,054), LEE, JANG et al., CHENG et al., and NAGARAJAN et al.

**Regarding claim 32,** Gandhi discloses a base station configured to support communications with a plurality of communication devices, the communications placing a load on the base station, the base station comprising:

a processor configured to monitor a plurality of parameters each relating to the load on the base station (col.2, lines 26-32; the base station includes a pair of measurers for measuring, i.e. monitoring, system performance indicators), and to detect an overload as a result of one of the parameters crossing a threshold (col.2, lines 54 – col.3, lines 1-5; col.4, lines 47 – col.5, lines 1-10; col.9, lines 30-33; the base station establishes a blocking threshold upon the measured second performance indicator that represent an overload control threshold for preventing overloading of the wireless communication systems with active subscribers stations, therefore if the first performance indicator exceeds the blocking threshold the wireless communication system rejects new calls because the system is overloaded).

But, Gandhi fails to particularly disclose wherein the base station comprises a second processor configured to support communications with the communication devices, wherein one of the parameters is a function of loading on the second processor.

However, a base station comprising a second processor is known in the art and Andersson is evidence of the fact. Andersson teaches a base station system comprising a plurality of processors as shown in figure 1 (i.e., RPD1, RPD2, ...) that monitors the load in each of the processors and

shares the load between processors for eliminating the risk of overload in the processors (abstract; col.1, lines 35-60).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention, to modify Gandhi to include a second processor in the base station, and wherein one of the parameters monitored is a function of the loading on the second processor, as suggested by Andersson, because it is well known in the art for a base station system to comprise plural processors to share the load between them, and to monitor the load in each of the processors to maintain the system stable.

But, the combination of Gandhi and Andersson fails to particularly disclose wherein the processors are further configured to reduce the load on the base station using a plurality of control mechanisms based on the type and degree of the load on the base station.

However, this feature is well known in the art and Lee is evidence of the fact. Lee teaches an overload control method that includes judging whether an access network (i.e., base station) is overloaded and restricting an originating call and a termination call (i.e., control mechanisms) according to the determined class (i.e., type) during overload, in addition the overload control can be discriminately performed according to a degree of the overload so that the overload control method can effectively cope with the overload situation (see abstract; p.0033-0036). The overload control processes periodically checks whether the access network is overloaded, and when is indeed overloaded, a call (i.e., terminating call or originating call) is discriminately restricted according to a degree of overload, furthermore, the overload control process can classify, for example, 24 classes (i.e., types) of overload according to a overload degree and restrict at least one of an originating call and a termination call processed on the basis of each class (p.0051-0052; Fig. 6).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to modify Gandhi to include the feature of reducing the load on the base station using a plurality of control mechanism based on the type and degree of the load on the base station, as suggested by Lee, in order to discriminately perform an overload control according to a degree and class of the overload so that the overload control method can effectively cope with the overload situation, and in addition to effectively manage the resources at the base station (abstract; p.0033-0034; p.0083).

Yet, the combination of Gandhi, Andersson, and Lee does not expressly disclose wherein the control mechanism used to control the load is also selected based on the type of application running in the base station, the persistence of the load on the base station and one or more quality of service (QoS) rules.

However, these parameters are well known in the art to influence the decision of controlling the load in a communication system as taught by Jang, Kim, and Nagarajan.

Jang teaches a method and system for limiting or controlling access in communication networks during overload conditions. Once the network (i.e., BSC or BS) is aware of the overload condition, it begins to analyze the condition to determine the proper course of action, and when it determines that access control should implemented, it then decides which type of application/call (i.e., voice, data, facsimile, etc.) to control. For example, if the overload condition is light to moderate, a decision might be to control or limit access to all data services, but allow voice services to continue, in another situation, the network may limit access to all digital facsimiles services (p.0024-0026, and 0029-0030).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention, to modify the combination to include the features of selecting a load control

mechanism based on the type of application, as suggested by Jang, since such a modification would provide the wireless communication network to limit or control different types of application in order to reduce the overload conditions.

Cheng teaches a method for controlling call processing overload at a base station by a "Two-Phase" overload control scheme that first reduces unnecessary user handoff activities in the base station, and then further reducing busy-hour call attempts (BHCA) traffic if processing overload conditions persist (i.e., overload persistence) and also using a known persistence test (col. 3, line 52 – col. 4, lines 1-20).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention, to modify the combination to include the features of selecting a load control mechanism based on persistence of the load in the base station, as suggested by Cheng, since such a modification would provide the wireless communication network to control the load by different methods when considered necessary according to the load persistence in the base station (col. 3, lines 56-62).

And, Nagarajan teaches that it is well known in the art that quality-of-service criteria is used to measure the effectiveness of call admission control policies to for example minimize the new call blocking and handoff call blocking probabilities in a wireless communication network, therefore, providing a better quality of service to the wireless users. In an operational wireless network needs to ensure that the QOS requirements are being met on an ongoing basis and to do this it might be necessary to vary the parameters of an admission control policy, as for example, the traffic load varies (col. 1, lines 26-60; col. 4, lines 46-60).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention, to modify the combination to include the features of selecting a load control

mechanism based on quality of service QoS rules, as suggested by Nagarajan, because it is well known in the art that wireless networks must meet quality of service requirements on an ongoing basis and deal with load variations while satisfying QoS requirements in order to provide a good quality of service to wireless users.

**Regarding claim 34**, Gandhi discloses a base station configured to support communications with a plurality of communication devices, the communications placing a load on the base station, the base station comprising:

a processor configured to monitor a plurality of parameters each relating to the load on the base station (col.2, lines 26-32; the base station includes a pair of measurers for measuring, i.e. monitoring, system performance indicators), and to detect an overload as a result of one of the parameters crossing a threshold (col.2, lines 54 – col.3, lines 1-5; col.4, lines 47 – col.5, lines 1-10; col.9, lines 30-33; the base station establishes a blocking threshold upon the measured second performance indicator that represent an overload control threshold for preventing overloading of the wireless communication systems with active subscribers stations, therefore if the first performance indicator exceeds the blocking threshold the wireless communication system rejects new calls because the system is overloaded);

a receiver (Fig. 1; receiver 14); and a transmitter (Fig. 1; transmitter 12), wherein one of the parameters is a function of receiver stability, or transmission power requirements (col.2, line 54 – col.3, lines 1-5; col.4, lines 58-62; col.3, lines 23-29, 36-42; col.4, lines 4-7; the base station measures a first performance indicator, i.e. parameter, which is the interference rise over the background noise that is a measure of signal quality or reliability over a defined coverage area for the reverse link).

But, Gandhi fails to particularly disclose wherein the base station comprises a second processor configured to support communications with the communication devices. However,

Andersson teaches a base station system comprising a plurality of processors as shown in figure 1 (i.e., RPD1, RPD2, ...) that monitors the load in each of the processors and shares the load between processors for eliminating the risk of overload in the processors (abstract; col.1, lines 35-60).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention, to modify Gandhi to include a second processor in the base station, as suggested by Andersson, because it is well known in the art for a base station system to comprise plural processors for sharing the load of mobile devices between them and maintain the system stable.

Nevertheless, the combination of Gandhi and Andersson fails to particularly disclose wherein the processor is configured to reduce the load on the base station using a plurality of control mechanisms based on the type and degree of the load on the base station.

However, this feature is well known in the art and Lee is evidence of the fact. Lee teaches an overload control method that includes judging whether an access network (i.e., base station) is overloaded and restricting an originating call and a termination call (i.e., control mechanisms) according to the determined class (i.e., type) during overload, in addition the overload control can be discriminately performed according to a degree of the overload so that the overload control method can effectively cope with the overload situation (see abstract; p.0033-0036). The overload control processes periodically checks whether the access network is overloaded, and when is indeed overloaded, a call (i.e., terminating call or originating call) is discriminately restricted according to a degree of overload, furthermore, the overload control process can classify, for example, 24 classes (i.e., types) of overload according to a overload degree and restrict at least one of an originating call and a termination call processed on the basis of each class (p.0051-0052; Fig. 6).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to modify Gandhi to include the feature of reducing the load on the base station using

a plurality of control mechanism based on the type and degree of the load on the base station, as suggested by Lee, in order to discriminately perform an overload control according to a degree and class of the overload so that the overload control method can effectively cope with the overload situation, and in addition to effectively manage the resources at the base station (abstract; p.0033-0034; p.0083).

Yet, the combination of Gandhi, Andersson, and Lee does not expressly disclose wherein the control mechanism used to control the load is also selected based on the type of application running in the base station, the persistence of the load on the base station and one or more quality of service (QoS) rules.

However, these parameters are well known in the art to influence the decision of controlling the load in a communication system as taught by Jang, Kim, and Nagarajan.

Jang teaches a method and system for limiting or controlling access in communication networks during overload conditions. Once the network (i.e., BSC or BS) is aware of the overload condition, it begins to analyze the condition to determine the proper course of action, and when it determines that access control should implemented, it then decides which type of application/call (i.e., voice, data, facsimile, etc.) to control. For example, if the overload condition is light to moderate, a decision might be to control or limit access to all data services, but allow voice services to continue, in another situation, the network may limit access to all digital facsimiles services (p.0024-0026, and 0029-0030).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention, to modify the combination to include the features of selecting a load control mechanism based on the type of application, as suggested by Jang, since such a modification would

provide the wireless communication network to limit or control different types of application in order to reduce the overload conditions.

Cheng teaches a method for controlling call processing overload at a base station by a "Two-Phase" overload control scheme that first reduces unnecessary user handoff activities in the base station, and then further reducing busy-hour call attempts (BHCA) traffic if processing overload conditions persist (i.e., overload persistence) and also using a known persistence test (col. 3, line 52 – col. 4, lines 1-20).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention, to modify the combination to include the features of selecting a load control mechanism based on persistence of the load in the base station, as suggested by Cheng, since such a modification would provide the wireless communication network to control the load by different methods when considered necessary according to the load persistence in the base station (col. 3, lines 56-62).

And, Nagarajan teaches that it is well known in the art that quality-of-service criteria is used to measure the effectiveness of call admission control policies to for example minimize the new call blocking and handoff call blocking probabilities in a wireless communication network, therefore, providing a better quality of service to the wireless users. In an operational wireless network needs to ensure that the QOS requirements are being met on an ongoing basis and to do this it might be necessary to vary the parameters of an admission control policy, as for example, the traffic load varies (col. 1, lines 26-60; col. 4, lines 46-60).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention, to modify the combination to include the features of selecting a load control mechanism based on quality of service QoS rules, as suggested by Nagarajan, because it is

well known in the art that wireless networks must meet quality of service requirements on an ongoing basis and deal with load variations while satisfying QoS requirements in order to provide a good quality of service to wireless users.

19. **Claim 37** is rejected under 35 U.S.C. 103(a) as being unpatentable over GANDHI et al. in views of ANDERSSON, LEE, LAAKSO, JANG et al., CHENG et al., and NAGARAJAN et al.

**Regarding claim 37,** Gandhi discloses a base station configured to support communications with a plurality of communication devices, the communications placing a load on the base station, the base station comprising:

a processor configured to monitor a plurality of parameters each relating to the load on the base station (col.2, lines 26-32; the base station includes a pair of measurers for measuring, i.e. monitoring, system performance indicators), and to detect an overload as a result of one of the parameters crossing a threshold (col.2, lines 54 – col.3, lines 1-5; col.4, lines 47 – col.5, lines 1-10; col.9, lines 30-33; the base station establishes a blocking threshold upon the measured second performance indicator that represent an overload control threshold for preventing overloading of the wireless communication systems with active subscribers stations, therefore if the first performance indicator exceeds the blocking threshold the wireless communication system rejects new calls because the system is overloaded);

a receiver (Fig. 1; receiver 14); and a transmitter (Fig. 1; transmitter 12), wherein one of the parameters is a function of receiver stability (col.2, line 54 – col.3, lines 1-5; col.4, lines 58-62; col.3, lines 23-29, 36-42; col.4, lines 4-7; the base station measures a first performance indicator, i.e. parameter, which is the interference rise over the background noise that is a measure of signal quality or reliability over a defined coverage area for the reverse link).

But, Gandhi fails to particularly disclose wherein the base station comprises a second processor configured to support communications with the communication devices, and a third one of the parameters is a function of loading on the second processor.

However, Andersson teaches a base station system comprising a plurality of processors as shown in figure 1 (i.e., RPD1, RPD2, ...) that monitors the load in each of the processors and shares the load between processors for eliminating the risk of overload in the processors (abstract; col.1, lines 35-60).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention, to modify Gandhi to include a second processor in the base station, and wherein one of the parameters monitored is a function of the loading on the second processor, as suggested by Andersson, because it is well known in the art for a base station system to comprise plural processors to share the load between them, and to monitor the load in each of the processors to maintain the system stable.

Nevertheless, the combination of Gandhi and Andersson fails to particularly disclose wherein the second one of the parameters is a function of transmission power requirements for the transmitter.

However, Laakso teaches a method for traffic load control in a telecommunication network comprising the steps of setting a first reference load value for the load of a respective cell (abstract, lines 1-11); the method measures the parameter PrxTotal which is the total received power in the uplink measured on cell basis (Page 3, Table), and establishes an overload condition if the PrxTotal exceeds the overload threshold PrxThreshold (p.0071; p.0074).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, for one of monitored parameters comprises transmission power requirements for a

base station transmitter as suggested by Laakso, because is a parameter well known to be used to estimate and control the state of congestion of a communication system due to wireless communication devices.

Nevertheless, the combination of Gandhi, Andersson, and Laakso fails to particularly disclose wherein the base station processor is configured to reduce the load on the base station using a plurality of control mechanisms based on the type and degree of the load on the base station.

However, this feature is well known in the art and Lee is evidence of the fact. Lee teaches an overload control method that includes judging whether an access network (i.e., base station) is overloaded and restricting an originating call and a termination call (i.e., control mechanisms) according to the determined class (i.e., type) during overload, in addition the overload control can be discriminately performed according to a degree of the overload so that the overload control method can effectively cope with the overload situation (see abstract; p.0033-0036). The overload control processes periodically checks whether the access network is overloaded, and when is indeed overloaded, a call (i.e., terminating call or originating call) is discriminately restricted according to a degree of overload, furthermore, the overload control process can classify, for example, 24 classes (i.e., types) of overload according to a overload degree and restrict at least one of an originating call and a termination call processed on the basis of each class (p.0051-0052; Fig. 6).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to modify Gandhi to include the feature of reducing the load on the base station using a plurality of control mechanism based on the type and degree of the load on the base station, as suggested by Lee, in order to discriminately perform an overload control according to a degree and class of the overload so that the overload control method can effectively cope with the overload

situation, and in addition to effectively manage the resources at the base station (abstract; p.0033-0034; p.0083).

Yet, the combination does not expressly disclose wherein the control mechanism used to control the load is also selected based on the type of application running in the base station, the persistence of the load on the base station and one or more quality of service (QoS) rules.

However, these parameters are well known in the art to influence the decision of controlling the load in a communication system as taught by Jang, Kim, and Nagarajan.

Jang teaches a method and system for limiting or controlling access in communication networks during overload conditions. Once the network (i.e., BSC or BS) is aware of the overload condition, it begins to analyze the condition to determine the proper course of action, and when it determines that access control should implemented, it then decides which type of application/call (i.e., voice, data, facsimile, etc.) to control. For example, if the overload condition is light to moderate, a decision might be to control or limit access to all data services, but allow voice services to continue, in another situation, the network may limit access to all digital facsimiles services (p.0024-0026, and 0029-0030).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention, to modify the combination to include the features of selecting a load control mechanism based on the type of application, as suggested by Jang, since such a modification would provide the wireless communication network to limit or control different types of application in order to reduce the overload conditions.

Cheng teaches a method for controlling call processing overload at a base station by a "Two-Phase" overload control scheme that first reduces unnecessary user handoff activities in the base station, and then further reducing busy-hour call attempts (BHCA) traffic if processing overload

conditions persist (i.e., overload persistence) and also using a known persistence test (col. 3, line 52 – col. 4, lines 1-20).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention, to modify the combination to include the features of selecting a load control mechanism based on persistence of the load in the base station, as suggested by Cheng, since such a modification would provide the wireless communication network to control the load by different methods when considered necessary according to the load persistence in the base station (col. 3, lines 56-62).

And, Nagarajan teaches that it is well known in the art that quality-of-service criteria is used to measure the effectiveness of call admission control policies to for example minimize the new call blocking and handoff call blocking probabilities in a wireless communication network, therefore, providing a better quality of service to the wireless users. In an operational wireless network needs to ensure that the QOS requirements are being met on an ongoing basis and to do this it might be necessary to vary the parameters of an admission control policy, as for example, the traffic load varies (col. 1, lines 26-60; col. 4, lines 46-60).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention, to modify the combination to include the features of selecting a load control mechanism based on quality of service QoS rules, as suggested by Nagarajan, because it is well known in the art that wireless networks must meet quality of service requirements on an ongoing basis and deal with load variations while satisfying QoS requirements in order to provide a good quality of service to wireless users.

20. **Claim 38** is rejected under 35 U.S.C. 103(a) as being unpatentable over GANDHI et al. in views of ANDERSSON,.LAAKSO, LEE, JANG et al., CHENG et al., and NAGARAJAN et al., and further in view of PADOVANI.

**Regarding claim 38**, the combination of Gandhi, Andersson, Laakso, Lee, Jang, Cheng, Nagarajan,. and Padovani disclose the base station of claim 37, but the combination fails to particularly disclose monitoring a fourth parameter comprising a function of the number of communication devices in communication with the base station.

However, Padovani teaches that a simple means for determining reverse link loading is to simply count the number of active users in the base station (col.4, lines 32-34). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to modify Gandhi to monitor a fourth parameter comprising a number of the communication devices in communication with the base station, as suggested by Padovani, because is conventional and well known in the art method for determining a reverse link loading and simple to implement.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marisol Figueroa whose telephone number is (571) 272-7840. The examiner can normally be reached on Monday Thru Friday 8:30 a.m. - 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lester G. Kincaid can be reached on (571) 272-7922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Marisol Figueroa

*Marisol Figueroa*
*Art Unit 2617*

LESTER G. KINCAID
SUPERVISORY PRIMARY EXAMINER